

NAVAL WAR COLLEGE
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**Inculcating Jointness:
Officer Joint Education and Training from Cradle to Grave**

by

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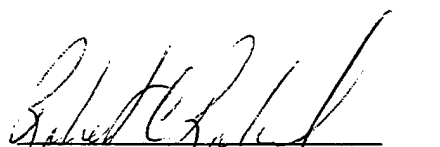
A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College, the Department of the Navy, or the Department of the Air Force.

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Abstract of

Inculcating Jointness: Officer Joint Education and Training from Cradle to Grave

A joint culture exists in the U.S. military as a result of the Goldwater-Nichols legislation and Skelton Panel on education. This culture is not enough however, and a need exists to improve officer Joint Professional Military Education and Training in order to develop better joint officers. This paper proposes a comprehensive cradle to grave approach of educating and training officers both in their own services and in the joint arena. This approach synthesizes several existing recommendations with new ones to affect a radical change in joint officer production.

The current existing PME and training structure is examined and shortfalls are noted. Next, a restructured PME process from pre-commissioning through the War colleges and Capstone is proposed. A new construct for changing the current Phased approach to JPME is proffered to not only help solve the military's joint manning problems, but also to address the large disparities between service beliefs and actions for PME. Lastly, joint training ideas are evaluated to enable more operational opportunities for both individuals and units. An effort here is made to reduce the operational impact of training on Unified commander's staffs and field units who feel the brunt of current operational and personnel tempo.

Professional attainment, based upon prolonged study, and collective study at colleges, rank by rank and age by age—those are the title reeds of the commanders of future armies, and the secret of future victories.
-Winston Churchill, 1946¹

Jointness, Joint, Joint Military Operations—all these terms mean different things to different people. While they may be hard to define collectively to everyone's satisfaction, there is certainly acceptance on some guiding principles on Jointness. Former Chairman of the Joint Chiefs of Staff, General Colin Powell, advanced through Joint Publication 1, *Joint Warfare of the US Armed Forces*, a belief that "We train as a team, fight as a team, and win as a team."² This same concept was embraced by the next Chairman, General John Shalikashvili, in the revision of Joint Publication 1 (1995), as he emphasized "Joint Warfare is team warfare."³ This "teamwork" approach has led to a growing acceptance of a joint culture and of fighting war "Jointly." It is almost a given in the military now that warfare in the future will be waged jointly. In fact, the Marine Corps senior leader recently opined, "Jointness is no longer questionable, it is the way we operate."⁴ Much of this joint culture can be traced to the effects of the Goldwater-Nichols Act of legislation in 1986 and to the Report of the Panel on Military Education of The One Hundredth Congress by the Committee on Armed Services, House of Representatives, 1989, commonly known as either the Skelton Report or Skelton Panel.⁵ The result of this culture has changed the military's focus over the last 14 years from "Should we be training and fighting jointly?" to "How do we best train and fight jointly?" This is quite a remarkable achievement. The question remains however, how can we raise an effective joint officer, one that not only deeply understands his service's unique expertise and contribution to the CINC's war-fighting mission, but also is fluent in the other service's capabilities and most importantly can integrate them all into an effective fighting force.

Despite the improvements in joint operations, education and training, we can do better and improve that joint culture for officers, through Professional Military Education (PME) and joint training opportunities. Specifically we can increase exposure to jointness earlier in an officer's career, change formal PME to improve both the joint aspects and the subsequent joint manning problems facing the Department of Defense (DoD)⁶, and increase joint training opportunities for individuals as well as joint staffs and organizations. Changes to PME drive most of the gains, as it is formalized and can be restructured faster, however there are steps to be taken with training as well. The net gain from these proposals will be a larger, better educated and trained cadre of professional military officers versed in joint operations and imbued with a common culture and sense of purpose they share with their joint brethren. These proposals are often overlapping and would work better if taken as part of the comprehensive plan rather than as individual solutions. These proposals also do not constitute a call for a merger to one single service or "purple force" as many advocate. There is great value to having separate services integrated as a joint force rather than a single service, such as diversity in research and development, development of core service capabilities, and innovations in doctrine. In a joint culture, services no longer fight over roles and missions but rather "the effectiveness and efficiencies of alternative military contributions to that common accepted joint (sic) strategy" that allows "civilian leaders...to increase military effectiveness."⁷ This is obviously quite a step forward for the military and the country. A grave danger exists in the absorption of the services into a single entity, beyond the scope of this paper, but worthy of further study. As General Jones added, "Jointness, however, must be balanced by service identity."⁸

It must be noted that the Joint Chiefs of Staff are currently working a proposal, entitled JPME (Joint PME) 2010, to address many of the same ideas as this paper. While not meant to be an endorsement nor a denouncement of that project, the purpose of JPME 2010 does provide a useful framework from which to start. JPME 2010 attempts to accomplish two main things; 1) educate more officers in Joint Operations, and 2) educate those officers with less inconvenience to the stakeholders (users of the PME graduates).⁹ The JPME 2010 study solicited information from the CINCs, the Joint Staff, and other senior officers on what PME should address in the future and what current problems should it solve. The responses were:

1. JPME should be a seamless system that is part of an officer's professional development from pre-commissioning through Capstone.
2. All officers assigned to joint positions should have JPME appropriate to their experience and level of responsibility.
3. If we continue with ad hoc JTFs (Joint Task Forces), junior officers need a fundamental knowledge of JTF operations.
4. The current Phase II (AFSC) TDY and return assignment process is disruptive to both the command and the individual.
5. The length of Phase II instruction at AFSC needs to be reviewed.
6. The inclusion of the Reserve Component personnel in JPME needs to be addressed.¹⁰

Both of the two goals and six complaints are covered in the proposed recommendations throughout this paper.

Professional Military Education

Current Structure

The Current system of PME is a blending of Service owned schooling and JCS owned (and often congressionally mandated) joint PME. Enclosure I shows an overview of Officer PME at the various levels.¹¹ The separate services own their own pre-commissioning programs and primary schools (O-1 to O-3 level). For these schools, the CJCS has issued broad guidance on joint topics to include in the curriculum, specifically joint introduction and joint awareness respectively. All CJCS guidance is contained in the Officer Professional Military Education Policy (OPMEP), CJCS Instruction 1800.1. JCS involvement ends here however. The services are free to develop their curriculum, including the joint piece as they see fit. What levels the students are taught to in the joint curriculums are not standardized, and may be vastly different in content and level of knowledge.

In the Intermediate level (O-4) the CJCS becomes much more involved. He has specific topics to be taught and learning levels to be attained. These are referred to as the Program for Joint Education (PJE). Each PJE learning objective is assigned a level of learning achievement taken from Bloom's *Taxonomy of Educational Objectives*, a universally known scale of achievement in education. Enclosure II shows the levels and their definitions.¹² Intermediate schools consist of service schools that teach what is known as Phase I of Joint PME (as well as service specific information) in 10 month residence and correspondence courses. The Armed Forces Staff College (AFSC) teaches a follow-on 12 week residence only Phase II course for officers en route to or at Joint duty assignments. The intermediate schools are generally regarded as the places where joint education begins in earnest. In the 1993 CJCS Military Education Policy Document (MEPD) that the OPMEP replaced, intermediate service schools

were seen as "...the primary source of joint education..."¹³ The OPMEP now replaces that statement with "The Officer PME framework identifies joint education as a career-long effort."¹⁴ This is only lip service however. A comparison of the new PME framework, Enclosure I with the old one in 1993, Enclosure III,¹⁵ reveals only semantic differences. The documents' subsequent discussions of the tables show further the lack of substantial differences. The Air Force and Army have follow-on 10 month schools for graduates of intermediate in-residence schools called the School of Advanced Airpower Studies (SAAS), and the School of Advanced Military Studies (SAMS). These schools do not count for either Phase I or II, but are designed to give each service a small (25-35 per year) group of what Representative Skelton called "strategists" to look into the future for military operations.¹⁶ Similarly, the Navy and Marine Corps have recently started like schools, though neither are as long.

The senior schools consist of 10 month residence and correspondence service schools that teach a broader level of joint information (though still only accredited for Phase I) as well as service specific information at a higher level. Joint objectives are prescribed in the OPMEP like the intermediate schools. AFSC also teaches senior officers Phase II after graduation. The exceptions at the senior level are the 10 month residence only National War College (NWC) and the Industrial College of The Armed Forces (ICAF). These two schools are accredited to award full JPME credit to their graduates, and along with AFSC make up the National Defense University (NDU). NDU falls under the control of the CJCS, while all intermediate and senior service schools are controlled by their respective services. This can lead to drastic differences in not only curriculum, but also in cultural views of education. The Navy, for instance, only believes their officers can, or should, attend one level of PME and their intermediate and senior

level schools' curriculum is almost indistinguishable as a result.¹⁷ This is a drastic difference from the other services and can have drastic results that will be discussed later.

Finally, the General/Flag officer level consists of several courses between two and six weeks long that focus on joint operational planning and war fighting. These courses (some mandated, others optional) are often seen as the equivalent of "continuing education,"¹⁸ or top-off courses rather than rigorous Professional Military Education.

Crawl Before You Walk

The Professional Military Education system must be seen as a whole rather than its individual parts as is usually studied. There is great synergy to a system that educates topics throughout an officer's career. Much like traditional education that teaches core subjects like math, science, or writing from Kindergarten through College, Jointness must be taught from the beginning till the end of one's career. This cradle-to-grave approach is also the most effective pedagogically and breeds the least amount of resistance. Think of the analogy of teaching a child a foreign language. The earlier they start, the better they will learn, "just as a child normally can learn a second language easier than an adult, our junior servicemen can learn jointness as a second language by starting earlier and using a building block approach."¹⁹ Teaching a subject early and often also is proven educationally to be much more effective for the long term. Canadian schools that immerse their English speaking students in French from day one continually show higher results not only in language skills but also in *all* academic disciplines.²⁰

The fact that officers need a better understanding of joint operations earlier is clear. The sheer commitment previously mentioned from the last few Chairman of the Joint Chiefs of Staff that "Joint warfare is team warfare," and "We train as a team and fight as a team"²¹ is not

missed on junior officers. The highly regarded Center for Strategic and International Studies commented, "...As the military is being downsized, it is more important than ever that the PME system, from the academies to the war colleges, be upgraded," and "...more must be done to inculcate a truly joint culture at all strata of the military profession."²² To understand the danger of not learning joint operations early in a career, one needs only to study the details of the tragic Blackhawk helicopter shoot-downs in Iraq, 1994. Army and Air Force flight operators, unfamiliar with working in joint operations, made numerous mistakes that unfortunately led to two F-15s shooting down two friendly Blackhawk helicopters, killing all 26 people on board. Our junior officers work in a joint arena from day one and cannot wait for intermediate service school to learn how to operate in that environment. As a Captain with less than one year in grade, I found myself in a Unified Commander's Operation Center coordinating with 3 services and the state department for airborne Cuban refugees trying to enter the country illegally. All officers have a story like this, it has become the rule rather than the exception anymore. What can we do to help?

We should start exposing our officers to the joint arena in their pre-commissioning phase. A powerful place to start is at the service academies. We must go beyond the OPMEP's "Introduction to service's missions." Various studies and articles have called for everything from Rotating classes 1 semester to all out merging into one "Defense Academy."²³ Having Cadets spend one semester at another academy is a good and possible option. In addition to that, during the summer after their junior year all cadets could be brought together for a 2-3 week field exercise where they have to integrate as a joint force. Current Academy summer exercises and the new Air Force Air and Space Basic Course field exercise could be

used as models. More joint faculty and coursework could also be added. Based on these experiences, smaller scale models could be developed for OTS/OCS and ROTC as well.

Primary level schools also offer opportunities for joint exposure. All operational basic schools (for O-1s and some O-2s) whose graduates may work in joint operations should include subject matter and limited wargames with joint flavor. As the emphasis in this stage is on the officer learning his primary war fighting skill, the joint portion would rightly be small, but the officers should become acclimated to having concern for more than just their area of specialty and their service. It is unrealistic to focus them on fighting as a single service. The Air Force recently included joint air operations both as an academic and simulation subject taught at their basic air battle management school with great results.²⁴ Traditionally the O-3 school in each service has limited academics to meet the joint requirement. Captain (O-3) schools also offer limited opportunities for exchange positions and all should vastly increase their curriculum in the areas of joint operations. Better joint acculturation opportunities for junior officers exist in training.

Walk Before You Run

Intermediate level school offers the greatest promise. It is possible for the service schools at this level to provide both Phase I and Phase II to in residence graduates. There are a few critical requirements needed to make this happen. The first is the student mix requirement for Phases I and II. Phase I intermediate service schools now have a non-host service requirement of 1 student per seminar and a faculty requirement of 10% non-host per service with a combined minimum of 25%. Currently Phase II is tied to the levels of Joint duty billets for graduates. While this level fluctuates, approximately 33-39% goes to the Army and Air Force each, 20-25% to the Navy, and 5-8% to the Marine Corps.²⁵ The Skelton panel made

this one of the requirements for joint education. The solution is to allow each college to have a different mix, but still ensure jointness. Each service would still retain the lion's share of the graduates. The intermediate service colleges graduate approximately the following numbers per year: Air Force 600; Army 1000; Navy 225, and Marine Corps 160. A proposed student mix (that would achieve jointness, but not drastically change the current service numbers) at all schools would be:

	Service	Air Force	Army	Navy	Marine
College					
Air Force College		58%	26%	10%	6%
Army College		21%	64%	10%	5%
Navy College		20%	22%	50%	8%
Marine College		15%	19%	15%	51%

There is a precedent for incorporating phase II into the service colleges. In Academic Year 1988-89 this plan was successfully prototyped, but congress did not trust the services to keep the required student levels and instituted Phase II at the AFSC instead.²⁶ Another precedent is that the NWC and ICAF *do grant both Phases I and II to all their graduates*. Yes, the services would get a little less service specific officers at their own colleges, but only marginally. The

payoff by eliminating the 12 week TDY to AFSC for all Phase II graduates would more than offset any *perceived* hardships or loss of service uniqueness.

The other aspect for this to work is the PJE objectives for the service colleges compared to the AFSC. Until 1996 the MEPD stated that Intermediate service colleges would teach all Phase I PJE's to the knowledge level and AFSC would teach the Phase II ones to the application level of Bloom's Taxonomy scale.²⁷ The 1996 OPMEP removed this statement. A review of the OPMEP comparing PJE's from service colleges to NWC and ICAF finds the areas identical. Intermediate service school's attainment levels range from the comprehend level (2nd lowest) to evaluate (highest—the only level to have this as a goal). The NWC and ICAF range from comprehend to analyze. The senior schools also range from comprehend to analyze.²⁸ Even AFSC only ranges from apply to analyze. It would not take much work to beef up the curriculum to make each PJE match those currently at AFSC or NWC. The current curriculum may already meet phase II standards in some areas. Major General Sams, then commandant of AFSC, testified as far back as 1993 that "...redundancy (between AFSC and Service schools curriculum—sic) is further exacerbated by the fact that many of the JPME Phase I schools are teaching the MEPD learning areas well beyond the knowledge level. Overall this is good for joint education but presents us with a problem"²⁹

If time needed is a critical factor, there is plenty of time at the schools to implement this. A better use of time (less administrative orientation at the start, etc.) could possibly save 1-2 weeks. The course could also be lengthened up to 11 months from its current 10 as needed. Lastly the electives program could be overhauled or eliminated to incorporate the Phase II requirements. While enjoyable for many, the range of electives is quite vast and could be sacrificed to produce better joint officers. By incorporating phase II, the DoD would produce

enough officers to exceed the numbers required to fill present Joint duty billets. This same argument holds true for senior service schools, though I recommend retaining the two NDU schools, NWC and ICAF, as they are, since they already award both Phases I and II.

While the above chart mix acknowledges the Navy problem of getting officers to school, it does not let them off the hook. One key aspect to this plan to incorporate phase II is that the Navy must change their view of and their practice of sending officers to PME. No longer can they claim a “uniqueness” where they cannot afford to send their best officers to PME. All services face critical shortages in operations and other career fields, and all demand time critical specialized training to hone war fighting skills. *Every Study* over the past eleven years cites the Navy as non-committed to PME and a stumbling block to implementing change.³⁰ Representative Skelton singled out the Navy as a source of frustration time and time again.³¹ The Navy runs both their intermediate and senior service schools three times a year and has almost identical curriculum for the two schools centered around three terms vice two at all other PME and JPME schools. This is a holdover from the Navy’s belief that they cannot send their officers to two schools. The sheer fact of trying to get Naval cooperation and changes to the course schedules accounted partially for the JPME 2010 working group rejecting the option to embed Phase II in service PME.³² The Navy’s selection process is also not like the other services. Naval officers are selected by their warfare community using availability rather than by central competition among all eligible officers. Informal conversations with Naval officers at the colleges indicate most of them are here because of timing and the view is the school does not enhance their career at all, while going to two schools would actually hurt it!³³ This not only hurts the Navy, but also the nation. Less Naval participation, and moreover the wrong participation, causes other service officers to get less

education of value from their PME experience as well. As the Navy's track record has not been strong on PME even "despite JCS guidance that such schooling is desired,"³⁴ Congress should legislate the requirement for them to develop two separate senior and intermediate curricula built around a two term academic year like the other services. They should also legislate the requirement for attendance in residence of at least one school as a prerequisite for attaining General/Flag rank in all services. The Joint nature of warfare previously discussed demands it.

Moving Phase II from the AFSC to the service colleges would increase the number of accredited Phase II graduates by 182%, a total increase from 1275 officers a year to 3600!³⁵ This is also 1745 more officers than JPME 2010 proposes from the resident PME colleges. If non-residence courses were added in, like JPME 2010's plan, this proposal would produce 6245 officers to JPME 2010's 4500.³⁶ In addition to increasing the number of students Phase II qualified annually, moving Phase II to the service colleges also has potential financial gains for the military as well. The Department of Defense Inspector General estimated in their 1993 recommendation to do the same, that the military could save \$2.9 million per year.³⁷ Using a three percent inflation index per year would yield \$3.7 million in today's dollars. While not a massive amount of money, it still is a savings.

Run

Another PME recommendation is the creation of two joint schools similar to SAAS and SAMS discussed earlier. These schools would not substitute for Phase I or II, nor replace SAAS or SAMS, but would rather develop strategists focused on joint issues exclusively. They should be small schools (25-30 people each) that follow both intermediate and senior level schools. It should be highly competitive and rewarding to be selected. The schools would be run at NDU since they will no longer teach phase II at the levels they currently do under these

proposals. The Skelton Panel, Representative Skelton himself, and the CSIS study all suggested various courses like these in 1989, 1992, and 1997 respectively, with no schools currently in place.³⁸ If these courses are agreed to, again it may have to be legislated. For senior level officers (Sr O-6 to O-8), three to five should be selected each year to perform research at NDU on critical *strategic level* joint issues directed by the CJCS. This assignment could be from six months to one year. This would continue education for a select few, and give the DoD a strong education program beyond Capstone. To avoid unneeded personnel upheavals, individuals could be assigned to these projects en route to or after a Pentagon tour.

The military should also make good use of correspondence and distance learning for PME. For those not able to attend in residence, a fully accredited Phase I program should be available to them via seminar or "virtual residency."³⁹ This ability should be available to every officer regardless of location, including the guard and reserve, who desires to complete Phase I PME at their appropriate level. Phase II for those officers not attending in residence could also be completed through virtual residency at the Joint Learning Centers (JLC) proposed, for Joint Forces Command (pilot program) and all of the CINCs as well as the Joint Staff.⁴⁰ Since this is where Joint duty billets are located, the TDY requirements would be relieved. The AFSC instructors freed from teaching Phase II in residence, could be farmed out to these centers as the full-time faculty (they will also be involved with training, mentioned later). One caution is to ensure DoD procures a viable Distance learning system. Residency in education is always a preferred method, but is not always practical. To be effective the virtual system must offer some of the advantages of interchanges between a multitude of different service officers, as true understanding grows from these interactions. For Phase II, the JLCs solve some of this problem.

A last PME recommendation is likely to be very controversial. Since DoD education is so diverse, a single agent for education should be delineated and given the power to oversee the execution of all education policy. This agent would have 4 deputies from each of the services with responsibility to oversee service specific education. Each service could set the policies still for their education, and the JCS should still set Joint education policy and guidelines. There remains too much disparity and lack of accountability to remain as spread out as it is. This education entity would deal with PME, *not training* (as some have called for⁴¹), as they are two distinctly different things, and would not interfere with the service's organize, train and equip missions. This "Joint Education Command" could be located at NDU,⁴² would be small, but would be headed by at least a three star officer to carry the weight it needs. It would absorb the present Military Education Division in the JCS J-7, as well as some of Joint Forces Command (JFCOM) J-7 education positions. This commander should report directly to the CJCS rather than JFCOM who should rightly oversee Joint training and their geographic responsibilities. By looking at the *entire* PME system as a whole, we are looking out of our cockpit to the horizon, rather than focusing on the small problems splattered on our windscreen.

Training

Improvements

Education is the major part of inculcating a joint culture that our officers can thrive in and training is the other, smaller, but equally important part. We have all heard "you have to do more with less," but we must then "train the less to do more."⁴³ As there is no formal agency charged with all military training, DoD took a step in the right direction with charging JFCOM with organizing and ensuring joint training. As a first step DoD should lobby Congress to

eliminate the Joint Specialty Officer (JSO) in favor of an officer who has completed Phase II and had a joint assignment. With earlier proposed PME recommendations the DoD would easily have enough qualified joint officers to meet requirements. With the elimination of JSOs and Phase II at AFSC in residence, AFSC could become the premier training center in DoD. They could concentrate on just-in-time training for officers heading to joint staffs. One of the users' complaints is, that even with JPME, officers still are unprepared for their joint staff assignments.⁴⁴ This could be alleviated through AFSC efforts at the JLCs, which should be renamed Joint Learning and Training Centers (JLTC). The first 2-3 weeks at a joint assignment, the officer would be assigned to the JLTC to cover position specific staff training needed by the command, much like specific CINC or JCS operations training now for personnel manning Command and/or Operation centers.⁴⁵ This training would be front loaded into personnel rotations so as not to "gap" the CINC staffs. As an administrative note, AFSC could also possibly be "chopped" over and report to JFCOMM, as they would now be focusing mainly on training. Along with this proposal the services and JCS should have provisions to allow O-3s filling O-4 billets to get "joint credit" as long as they complete Phase I & II within a three to five year period after their assignment. This would also alleviate service joint manning and training problems.

Another recommendation for junior officers is to mandate more exchange slots in operational specialties with like missions. Marine and Army officers would benefit from cross exchanges in infantry, armor, aviation, combat support and combat service support. The Air Force could certainly expand aviation and exchanges with the Navy, Marine Corps, and the Army. All services could benefit from Command and Control personnel exchanges as we continue to emphasize C2 systems and processes in a network centric military. As no unit likes

to lose people all of these exchanges would not have to be for 3-4 years. Some could be as short as a month or so, with the officer simply observing a like unit in field exercises or deployments in order to gain an understanding of how to integrate their own capabilities. There would be no shortage of volunteers for these training opportunities for junior officers, and the units would truly benefit.

At the more senior level, Majors/Lt Commanders could fill exchange tours and then return to their units and serve as a "Joint Liaison Officer" much as the services train and use tactics officers now. This officer would be charged with integrating joint training in their units upon their return. A program could also be set up with this in conjunction with JFCOM under their joint training hat. Previous experience with this has been favorable. Captain Rubel, Deputy Dean, Center for Naval Warfare Studies, said "one of the most valuable officers I ever had as a Naval Fighter Squadron Commander was an Air Force F-16 Weapons School exchange officer. My experience with that program leads me to believe that no Naval staff officer should serve as an Air Wing Commander without having served at an Air Force Numbered Air Force staff."⁴⁶ The integration of forces is obvious and considered crucial to the operators in the field. For other mid-to senior level officers (O-4 to O-6) a "Deputy or Vice Commander" position could be created at the appropriate level to offer joint command opportunity and training for carefully selected officers with maximum potential. Typically officers do not get joint command opportunities until they are very senior, usually General or Flag officer, and it can be too late at that point.

The last training proposal to be explored is a *much* greater use of distributed mission simulation. Several studies have been undertaken to improve military training. Almost all have recommended as the number one course of action expanded simulation. The most notable is a

1997 Rand study that looked at multiple options and overwhelmingly recommended Simulation as the best course of action. They even offered ways to save money by converting existing operational equipment into effective trainers down to the unit level rather than spending millions of dollars on new complex systems.⁴⁷ The U.S. Congress even strongly suggested that the military complete more training and complete it through simulation. They went so far as to say "Simulation Technology offers the potential to revolutionize training."⁴⁸ The Air Force has recently invested in a Distributed Mission Training System that links simulators for AWACS command and control aircraft to others for F-15 air superiority and F-15E and F-16 ground attack aircraft. Now geographically separate units can link together for realistic training without leaving their home base and save hundreds of thousands of travel dollars each year. The simulator at Tinker Air Force Base in Oklahoma can even data link with all NORAD Air Defense Sectors and work live aircraft training missions from their home station. The success of the program for AWACS has led to plans to purchase full crew simulators for every AWACS unit in the world. AWACS units are what the Air Force calls "High Demand, Low Density" units and because of operational tempo cannot afford to go to all of the requested training exercises. By linking in to other simulators and live missions around the United States, aircrews can remain trained to previous levels without undue strain on personnel being deployed in excess of service goals.⁴⁹ The simulation system also negates the effect of bad weather making training available 24 hours a day, 365 days a year.

Distributed Simulation holds great promise for the training of Unified Commander's Battle Staffs. Many commands including JFCOM, USSPACECOM, and others have already seen the value of having centralized training centers that rotate Battle Staffs through in order to standardize procedures to the greatest extent possible. This allows joint officers who change

commands to not need as much training upon arrival. Standardization also vastly helps joint officers who deploy from a supporting command as augmentees or liaisons to the geographic CINC's command during a crisis. The Air Force recently undertook a program to standardize Air Operation Centers to a "baseline" at their Blue Flag facility at Hurlburt Field, Florida.⁵⁰ Joint staff officers now deploying in support of air operations in a geographic CINCs area of responsibility have standardized skills and can expect to be familiar with baseline procedures regardless of the theater.

The proposals presented attempt to address the user's of joint officers concerns with the present PME and training systems in place. Can we do better? Yes! Are these the only answers? No. They are, however, a good place to start. Some of them have been suggested previously in history in a similar fashion. They are presented here though as a comprehensive set of improvements to make radical gains rather than incremental ones. They would take time to implement, but we need to start now. Having superb officers, versed in the joint arena is a prerequisite for success now and in the future. If we wait to improve, we run the risk of not only difficulty in implementation, but also the greater risk of being unprepared on the battlefield.

*If you plan for 1 year, plant rice.
If you plan for 10 years, plant trees.
If you plan for 100 years, educate men.
-Confucius⁵¹*

NOTES

¹ Churchill quoted in Steven H. Kenney, "Professional Military Education and the Emerging Revolution in Military Affairs," Airpower Journal, Fall 1996, 50.

² Dr. Don M. Snider, "The US Military in Transition to Jointness." Airpower Journal, Fall 1996, 18-19.

³ Joint Publication 1, *Joint Warfare of the Armed Forces of the United States*, 10 January 1995, i.

⁴ General James L. Jones, Commandant U.S. Marine Corps, in response to the question, "Much is made of the term Jointness, and we teach it here; what are your thoughts on Jointness?" during an address to the U.S. Naval War College, 11 January, 2000. Comments are reprinted here with his permission.

⁵ This report is known as the Skelton Report or Skelton Panel after Representative Ike Skelton, Missouri, who was the Chairman of the Panel on Military Education, and who has continued to be actively involved in improving Joint military education and training in order to improve Joint warfighting capabilities.

⁶ DoD Inspector General report on JPME Phase II, 1998 reported in late 1997 a shortage of 189 phase II graduates existed for Joint Billets.

⁷ Snider, 21.

⁸ Jones, 11 January 2000 address.

⁹ JPME 2010 briefing to the Naval War College, Fall 1999.

¹⁰ JPME 2010 Course Of Action (COA) development report, 1999, Appendix B, Issues derived from the Phase I study.

¹¹ Chairman of the Joint Chiefs of Staff, Officer Professional Military Education Policy (OPMEP) (Washington, DC: Pentagon, 1996), A-B-2.

¹² Bloom's *Taxonomy of Educational Objectives*, taken from OPMEP, C-1 to C-2. Bloom's Taxonomy is almost universally used in military training as well as many civilian training schools and educational institutions. Taxonomy measures learning in the cognitive domain. ** Of note, The CJCS "Military Education Policy Document" of 1993 that the 1996 OPMEP replaced used both Bloom's Cognitive taxonomy and Krathwohl's Affective taxonomy. The two are usually used together in developing learning objectives. It is unknown why the affective domain was removed.

¹³ Chairman of the Joint Chiefs of Staff, Military Education Policy Document, (MEPD), (Washington, DC, Pentagon, 1993), II-8.

¹⁴ OPMEP, 3.

¹⁵ MEPD, II-2.

¹⁶ For Representative Skelton's Panel discussions of this concept see U.S. Congress, Report of the Panel On Military Education of the One Hundredth Congress of the Committee on Armed Services, House of Representatives, (Washington DC, US Government Printing Office, 1989), 23-41.

¹⁷ The Navy, however is aware of this. For a good discussion see Rear Admiral James R. Stark's (Former President of the Naval War College) comments in the Center for Strategic and International Studies, Professional Military Education: An Asset for Peace and Progress, March 1997, 54, 60.

- ¹⁸ VADM J.A. Baldwin, "Educating Tomorrow's Leaders Today," Defense, July/August 1992, 59.
- ¹⁹ LTC Samuel E. Ferguson, "Twenty-first Century Leadership: Perils and Solutions," An unpublished paper for the Joint Maritime Operations department, U.S. Navy War College, 1998.
- ²⁰ Author's unpublished thesis, "Comparison of Bilingual Education in Canada and the United States," for Master's of Art in Education, Chapman University, 1994. Research taken from Merrill Swain and Sharon Lapkin, Evaluating Bilingual Education: A Canadian Case Study. Toronto: Ontario Institute for Studies in Education, 1982, 47-73.
- ²¹ Joint Pub 1, i.
- ²² Center for Strategic and International Studies, xi-xii.
- ²³ For good discussions see aforementioned Center for Strategic and International Studies report, 37. Also see Lt Timothy J. Haraden, "Joint From Day One," Proceedings, July 1995, 37-39 for a good discourse on combining all academies
- ²⁴ Based on author's experience at USAF Battle Management School 1996-99.
- ²⁵ US Congress, Hearing before the Military Forces and personnel Subcommittee of the Committee on Armed Services, House of Representatives, Hearing Held April 23, 1993, (Washington DC, US Government Printing Office), 81-82.
- ²⁶ Inspector General, Department of Defense, Joint Professional Military Education Inspection Report, 1993, 27.
- ²⁷ MEPD, A-2.
- ²⁸ OPMEP, C-B-1 to C-F-2.
- ²⁹ US Congress, hearing April 23, 1993, 8-9.
- ³⁰ For discussions on the Navy see Skelton panel report, 1989; CSIS study, 1997; Office of The Inspector General, Department of Defense, Evaluation Report on Joint Professional Military Education Phase II, 1998.
- ³¹ Most recently in "JPME: Are we there yet?" Military Review, Jan/Feb 1997, 98.
- ³² JPME 2010 COA, Appendix E, section 5a.
- ³³ Author's strictly unscientific, informal conversations with approximately 12 different naval officers. 100% unanimous on PME beliefs however.
- ³⁴ Skelton Panel, 77-78.
- ³⁵ DoD IG Report, 1993. Using IG numbers provided on page 57, and assuming all service school grads would get Phase II credit (Total Number 3232), and adding NDU grads (375). $3232+375=3607$. Current total is AFSC (900) plus NDU (375), $900+375=1275$.
- ³⁶ JPME course of action study proposes producing 1275 officers from AFSC and an additional 580 from the service colleges, $1275+580=1855$. Through Distance/Distributed PME they propose by 2010 to up the number of PME graduates from 1855 to 4500.
- ³⁷ DoD IG Report, 1993, 27.
- ³⁸ See Skelton Panel, 4-5.; Skelton "JPME: are we there yet?," 101.; CSIS study, 44-45.
- ³⁹ For the best of many discussions on virtual residency and distance learning programs see "Professional Military Education in 2020," Airpower Journal, Summer 1995, 26-41. (Author Unknown)
- ⁴⁰ JPME 2010 briefing.
- ⁴¹ Robert B. Kupiszewski, "Joint Education for the 21st Century," Joint Forces Quarterly, Spring 1995, 72-76. While a good proposal I feel he goes too far in advocating all education *and* training be incorporated in one organization *and* in one location.

⁴² Maj Gen Sams testimony that there "...is plenty of space on the campus (for new construction sic)," US Congress hearing, April 23, 1993, 22.

⁴³ Major Pat Raglow, USAF, conversation with author on how to solve USAF Air Battle Management training problem, Tyndall AFB, FL, Spring, 1997.

⁴⁴ CSIS study, 11, 57-63.

⁴⁵ Many CINCs and JCS (such as USSAPCECOM/NORAD Command Center or National Military Command Center) run training programs from 2-5 weeks for operations personnel in Command/Operation Centers.

⁴⁶ Author interview With Captain Robert Rubel, U.S. Naval War College, December 1999.

⁴⁷ John D. Winkler and Paul S. Steinberg, "Restructuring Military Education and Training," Lessons from Rand Research, 1997, xvii.

⁴⁸ U.S. Congress, Service and Joint Training: Lessons Learned From Recent Conflicts. Hearing before the Military Forces and Personnel Subcommittee. Hearing Held March 10, 1994, (Washington DC, US Government Printing Office), 4, 14-18.

⁴⁹ Author's own experience at USAF Air Battle Management school 1996-99; and conversations with Lt Col Jim Patterson, AWACS Airborne Air Control Squadron Commander, Tinker AFB, OK, and previously Air Combat Command, Command and Control Staff officer for AWACS training and employment, 1995-6.

⁵⁰ Authors' conversations with Col Pat Madden, Aerospace Command and Control Agency, Langley AFB, VA, and Col Steve Carr, Air Force Command and Control Training and Innovation Center, Hurlburt Field, FL, 1997-98.

⁵¹ Confucius quoted in Chris Shaw. Professional Military Education: an Alternative Approach. Ft McNair, Washington DC, The Industrial College of the Armed Forces, 1992, 1.

OFFICER PROFESSIONAL MILITARY EDUCATIONAL FRAMEWORK (Figure A-B-1)					
GRADE	CADET/MIDSHIPMAN	0-1/0-20-3	0-4	0-5/0-6	0-7/0-8/0-9/0-10
LEVEL OF MILITARY EDUCATION	PRE-COMMISSIONING	PRIMARY	INTERMEDIATE	SENIOR	GENERAL/FLAG
EDUCATIONAL INSTITUTIONS AND COURSES	SERVICE ACADEMIES ROTC OCS/OTS	<ul style="list-style-type: none"> - Basic & Advanced Branch or Warfare Specialty Schools - Primary Level PME Courses 	<ul style="list-style-type: none"> - Air Command & Staff College - Army Command & General Staff College - College of Naval Command & Staff - Marine Corps Command & Staff College - Naval Postgraduate School - <i>Armed Forces Staff College (Joint & Combined Staff Officer School)</i> 	<ul style="list-style-type: none"> - Air War College - Army War College - College of Naval Warfare - Marine Corps War College - <i>Industrial College of the Armed Forces</i> - <i>National War College</i> - <i>Armed Forces Staff College (Joint & Combined Warfighting School)</i> 	<ul style="list-style-type: none"> - Capstone - Joint Flag Officer Warfighting Course - Joint Forces Air Component Command Course - Seminars/Courses
LEVEL OF WAR EMPHASIZED	CONCEPTUAL AWARENESS OF ALL LEVELS	<div> <div>TACTICAL</div> <div>OPERATIONAL</div> <div>STRATEGIC</div> </div>			
FOCUS OF MILITARY EDUCATION	Introduction to Services' Missions	<ul style="list-style-type: none"> - Service Values - Warfare Specialty/ Branch Operations - Leadership - Staff Skills 	<ul style="list-style-type: none"> - Operational Art - Joint Force Operations - Introduction to National Security and Military Strategy 	Primary Emphasis: <ul style="list-style-type: none"> - Service Schools: National Military Strategy, Theater Strategy, & Campaigning - Joint Schools: National Security Strategy 	<ul style="list-style-type: none"> - Theater-Level Unified, Joint, and Combined Operations
JOINT EMPHASIS	<ul style="list-style-type: none"> - Joint Introduction - Organization for National Security - Capabilities of the US Armed Forces in 21st Century Battlespace - JCS and CINCs: Origins and Organizations - Service Interaction - Joint Warfare Concepts and Philosophy 	Joint Awareness <ul style="list-style-type: none"> - Joint Task Force Organization - Relation Between Joint and Service Doctrine - Tactical Battlespace Systems Integration - Joint and Service Weapons Systems - Service Contribution to Joint Warfighting 	PJE Phase I <ul style="list-style-type: none"> - National Military Capabilities and Command Structure - Joint and Multinational Forces at the Operational Level of War - Joint Planning and Execution Process - Systems Integration at the Operational Level of War 	PJE Phase I <ul style="list-style-type: none"> - National Security Strategy - National Planning Systems and Processes - National Military Strategy and Organization - Theater Strategy and Campaigning - Systems Integration in 21st Century Battlespace 	<ul style="list-style-type: none"> - Integration of National Military Strategy with National Security Strategy - Integration of National Security Strategy with National Policy/Requirements
FOCUS OF PJE PHASE II	Not Applicable	Integrated strategic deployment, employment, sustainment, and redeployment of joint forces.			

Key: 1. Joint schools identified by bold italics. 2. PJE Phases I and II are not applicable to these colleges. 3. Armed Forces Staff College teaches PJE Phase II only, primarily at the operational level. 4. Areas in this figure depicting emphasis devoted to each level of war are representative and do not indicate mandatory topics.

JOINT LEARNING AREAS AND OBJECTIVES

This enclosure establishes JPME learning objectives. Descriptive verbs identify standards for measuring the level of learning achievement. Use of these verbs is meant to indicate a level of learning achievement, not to prescribe an educational technique. The verbs, drawn from Bloom's *Taxonomy of Educational Objectives* (reference k), are highlighted below in increasing levels of achievement.

a. Know. The ability to remember previously learned material. This level involves recall of a wide range of material, from specific facts to complete theories, but all that is required is bringing to mind appropriate information. Related terms include defines, describes, identifies, labels, lists, matches, names, outlines, reproduces, selects, and states.

b. Comprehend. The ability to grasp the meaning of material. This level may be shown by translating material from one form to another, interpreting material, or estimating future trends. Related terms include converts, defends, distinguishes, estimates, explains, extends, generalizes, gives examples, infers, paraphrases, predicts, rewrites, summarizes, translates, and understands.

c. Apply. The ability to use learned material in new and concrete situations. This level includes application of rules, methods, concepts, principles, laws, and theories. Related terms include changes, computes, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, and uses.

d. Analyze. The ability to break down material into its component parts so that its organizational structure may be understood. This level includes identification of the parts, analysis of the relationships between parts, and recognition of the organizational principles involved. Related terms include breaks down, diagrams, differentiates, discriminates, distinguishes, illustrates, infers, outlines, points out, selects, separates, and subdivides.

e. Synthesize. The ability to put parts together to form a new whole. This level involves production of unique communications, a plan of operations, or a set of

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abstract relations. Related terms include categorizes, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, and writes.

f. Evaluate. The ability to judge the value of material for a given purpose. Judgments are to be based on defined internal (organizational) or external (relevance to the purpose) criteria. Criteria are subject to value judgments. Related terms include appraises, criticizes, discriminates, explains, justifies, interprets, and supports.

MILITARY EDUCATION FRAMEWORK

GRADE	Cadet/Midn	O-1/O-2/O-3	O-4	O-5/O-6	O-7/O-8/O-9/O-10
LEVEL OF MILITARY EDUCATION	Pre-Commissioning	Primary	Intermediate	Senior	General/Flag
EDUCATIONAL INSTITUTIONS AND COURSES	Service Academies	<ul style="list-style-type: none">- Basic & Advanced Branch or Warfare Specialty Schools- Primary Level PME Courses	Continuing Professional Education		
	ROTC		<ul style="list-style-type: none">- Air Command & Staff College- Army Command & General Staff College- College of Naval Command & Staff College- Marine Corps Command & Staff College	<ul style="list-style-type: none">- Air War College- Army War College- College of Naval Warfare- Marine Corps War College	
	OCS/OTS		<ul style="list-style-type: none">- Joint Forces and Operational Level of War- Organization and Command Relationships- Joint C4 and Info- Defense Planning Systems	<ul style="list-style-type: none">- National Military Capabilities and Command Structure- Joint Doctrine- Joint Planning- Intro to Joint/Combined Ops- Campaign Planning- Joint/Combined Warfare (Theater Context)	
LEVEL OF WAR EMPHASIZED	Conceptual Awareness	Armed Forces Staff College			
FOCUS OF MILITARY EDUCATION	Introduction to Service Missions	TACTICAL		STRATEGIC	
		OPERATIONAL		STRATEGIC	
		<ul style="list-style-type: none">- Warfare Specialty/ Branch Operations- Service Values- Leadership- Staff Skills	<ul style="list-style-type: none">- Theater Level Operational Art- Combined Arms/ Composite Warfare- Introduction to National Military & Security Strategy	<ul style="list-style-type: none">- Primary Emphasis: Service Schools: National Military Strategy- Joint Schools: National Security Strategy	<ul style="list-style-type: none">- Theater Level Joint and Combined Operations- Synthesis of National Military Strategy with National Security Strategy- Synthesis of National Security Strategy with National Policymaking Requirements
JOINT EMPHASIS (PJE Phase I at Senior & Intermediate Levels)	Joint Introduction <ul style="list-style-type: none">- History- Purpose- Overview	Joint Awareness <ul style="list-style-type: none">- Organizations- Missions- Inter-Service Relationships	<ul style="list-style-type: none">- Joint Forces and Operational Level of War- Organization and Command Relationships- Joint C4 and Info- Defense Planning Systems	<ul style="list-style-type: none">- National Military Capabilities and Command Structure- Joint Doctrine- Joint Planning- Intro to Joint/Combined Ops- Campaign Planning- Joint/Combined Warfare (Theater Context)	
FOCUS OF PJE PHASE II (NDU SCHOOLS ONLY)	Not Specified for These Levels				

PJE Phase I

Full PJE

Bibliography

Baldwin, VADM J.A. "Educating Tomorrow's Leaders Today." Defense. July/August 1992, 56-63.

Chairman of the Joint Chiefs of Staff. Officer Professional Military Education Policy, CJCSI 1800.01. Washington DC, Pentagon, 1 March 1996.

Chairman of the Joint Chiefs of Staff. Military Education Policy Document, CM-1618-93. Washington DC, Pentagon, 23 March 1993.

Cheyney Dick et al. Professional Military Education: An Asset for Peace and Progress. Washington DC, Center for Strategic and International Studies, 1997.

Chilcoat, Richard A. "The 'Fourth' Army war College: Preparing Strategic Leaders for the Next Century." Parameters. Winter 1995-96, 3-8.

Clark, Edward S. A Comparative Analysis of Intermediate Service College (ISC) Phase I Joint Professional Military Education (JPME). Monterey, CA: U.S. Naval Postgraduate School, 1990.

Cropsey, Seth. "The Limits of Jointness." Joint Forces Quarterly. Summer 1993, 72-79.

Department of Defense, Inspector General. Joint Professional Military Education Inspection Report. (93-INS-09) Arlington, VA: Department of Defense, 1993.

_____. Joint Professional Military Education: Phase II Evaluation Report. (98-156) Arlington, VA: Department of Defense, June 16, 1998.

Ferguson, Samuel E. Twenty-First Century Leadership: Perils and Solutions. Newport, RI: U.S. Naval War College, 1998.

Gebert, Stephen E. PME, Lessons Learned, and the Joint Operational Commander. Newport, RI: U.S. Naval War College, Joint Military Operations Department, 1998.

Graves, Howard D and Snider, Don M. "Emergence of the Joint Officer." Joint Forces Quarterly. Autumn 1996, 53-57.

Haraden, Lt Timothy J. "Joint From Day One." Proceedings. July 1995, 37-39.

Hollingsworth, Stephan L. The War Colleges: the Joint Alternative. Maxwell Air Force Base, AL: Air War College, Air University, 1990.

Kenney, Steven. "Professional Military Education and the Emerging Revolution in Military Affairs." Airpower Journal. Fall 1996, 50-64.

Kupiszewski, Robert B. "Joint Education for the 21st Century." Joint Forces Quarterly. Spring 1995, 72-76.

Meigs, Montgomery C. and Fitzgerald, Edward J. III. "University after next." Military Review. March/April, 1998, 37-45.

Miller, Stephen J. Joint Education: Where it Really Should Begin. Carlisle Barricks, PA: U.S. Army War College, 1993.

Pasierb, Barbara L. Educating the 21st Century Leader: a Critical View of the Military Senior Service Colleges With an Eye Towards Jointness. Carlisle Barracks, PA: U.S. Army War College, 1998.

Price, David E. "Leadership: Some Thoughts on the Military Circa 2025." Joint Forces Quarterly. Autumn 1996, 97-99.

Proceedings of the Naval Postgraduate School and Office of Naval Research Conference on Military Education: PME for the 21st Century Warrior. Monterey, CA: Naval Postgraduate School, 1998.

"Professional Military Education in 2010." Airpower Journal. Summer 1995, 27-41. (Author Unknown)

Rubel, Robert C. Captain, U.S. Navy. U.S. Naval War College, Newport, RI., personal interview with author, December 1999.

Shaw, Chris. Professional Military Education: an Alternative Approach. Washington, DC: Industrial College of the Armed Forces, National Defense University, 1992.

Skelton, Ike. "JPME: Are We There Yet?" Military Review 77, no.1 (Jan-Feb 1997): p. 96-101.

Snider, Don M. "The US Military in Transition to Jointness." Airpower Journal. Fall 1996, 16-27.

U.S. Congress. House Committee on Armed Services. Military Forces and Personnel Subcommittee. Professional Military Education at the Armed Forces Staff College. Hearing, 103rd Congress, 1st session. Washington, DC: US Government Printing Office, 1994.

_____. House Committee on Armed Forces. Panel on Military Education. 101st Congress, 1st session. Washington DC: US Government Printing Office, 1989.

_____. Service and Joint Training: Lessons Learned From Recent Conflicts. Hearing, 103rd Congress, 2nd session. Washington, DC: US Gov't Printing Office, 1994.

U.S. General Accounting Office, National Security and International Affairs Division. Air Force: Status of Recommendations on Officer's Professional Military Education. Washington DC: General Accounting Office, March 1991.

U.S. Joint Chiefs of Staff. Joint Warfare of the Armed Forces of the United States (Joint Pub 1). Washington DC, Pentagon, 10 January 1995.

U.S. Naval War College. Summary of Major Provisions of the Department of Defense Reorganization Act of 1986. (NWC 4022), Operations Department, U.S. Naval War College Printing Division, 1999.

Winkler, John D. and Steinberg, Paul S. "Restructuring Military Education and Training." Rand Research Report. 1997.